

- d) Effective and up to date procedures for reporting and dealing with security threats, breaks or incidents.
- e) Procedures for the evaluation and testing of security plans and for periodic review and plan update

**Conclusion:** The differences between the two norms/regulations (ADR and CWA) may result in unacceptable break of security during transportation. The Security Advisor is the person that has to provide the measures, protocols and monitoring to assure the minimization of risks in the management and transportation of infectious substances.

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#### **Bioterrorism: toxins as potential biological weapons - an emerging global health threat**



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**Purpose:** Intentional bioterrorism attacks have been recorded throughout history, and research in medical defence against intentional biological threats has become a growing priority. Biological warfare is defined as the intentional use of living organisms such as bacteria, viruses and fungi with the intent to cause disease, death, or environmental damage. Toxins represent a specific new category of possible bio-terror agents owing their high toxicity, ease of production and ease of dissemination. Most of bacterial toxins are large proteins that affect either the nervous system (neurotoxins) or damage cell membranes. Some of these compounds are used for military purposes, other are less known and used but have the potential for use in terrorist-designed biological weapons.

**Methods & Materials:** Toxins are and heterogeneous groups of compounds, that share commonalities both with biological and chemical agents, produced by bacteria, plants and animals; most of the toxins specifically affect the mammalian nervous system, developing severe adverse health effects. The detection of biological agents is often very difficult as the illness can take anywhere from several hours to week, depending of the agent. There is not specific antidote or effective treatment from most of the biotoxins. Different technologies for toxin detection have been established, but hardly any universally agreed reference methods or reference materials are available. Understanding the mechanism of structure, action and toxicity represent the starting approach to develop adequate and timely medical countermeasures. The authors would like to analyze and reviewing these toxins, discussing the structure, symptoms, toxicity and treatment, along with their potential malevolent use.

**Results:** The aim is to provide specific information to enhance specific medical preparedness and response, to enable further understanding of these toxins and their potential role as biological weapons.

**Conclusion:** Biotoxins are highly toxic and can be used as potential bioweapons for military or terrorist scope, representing a problem of national or international concern in public health and homeland security. Understanding the global profile of these

toxins is crucial for health and risk assessment and to develop effective medical countermeasures, in order to minimize the adverse health effects and prevent fatalities.

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#### **Assessment of municipal opened landfill and its impact on environmental and human health in central Thailand**



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**Purpose:** Non-sanitary landfill or open dumping stored both non-hazardous and hazardous waste disposed from households, restaurants, agricultural activities, and industrial sectors that could contaminated to the environment. This study aimed to assess the environmental status and its impact of opened solid waste landfill located nearby agriculture and natural resources in municipal area of central Thailand.

**Methods & Materials:** Soil and water samples were collected from six locations of landfill and surrounding areas such as paddy field and water reservoir at two-month interval for six consecutive months. Heavy metal contamination and quality of soil and water including physical, chemical, biological parameters were analyzed by using standard methods. Agricultural activities of the land nearby the landfill and practice behavior of workers in the landfill have been observed.

**Results:** We found *Salmonella* spp. and *Clostridium perfringens* contaminated in soil samples collected from both inside and outside of landfill. Heavy metals such as Iron (Fe), Magnesium (Mg) and Aluminum (Al) were found in high level, additionally, contamination of Copper (Cu) in soil collected inside the landfill was presented. Water collected from leachate and natural resource was contaminated by coliform bacteria and *Salmonella* spp. Level of Fe in all water samples was high, however this amount was not above limited value. Inappropriate self-protective and non-hygienic behavior of workers in the landfill was also found.

**Conclusion:** Soil and water samples collected from the opened landfill were contaminated with bacteria. Occupational hazard, protective awareness and protective measure of people who exposed to the landfill such as garbage collectors and farmers should be concerned. Level of heavy metals in soil and water, especially in paddy fields around the landfill should be periodically monitored.

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